

**WHAT IS CLAIMED IS:**

1    1. An apparatus which holds an optical fiber in alignment to an optical device, said  
2    apparatus comprising:  
3         a fiber holder having a first plurality of indentations formed therein;  
4         an optical fiber within one of said first plurality of indentations;  
5         a base substrate having a second plurality of indentations formed into said base;  
6         a plurality of spacers, each of said plurality of spacers within a corresponding  
7         one of the second plurality of indentations, wherein said fiber holder is mounted on said  
8         base with said plurality of spacers within said first plurality of indentations; and  
9         an optical device mounted to said base.

1    2. The apparatus of claim 1 wherein the optical device comprises a lens.

1    3. The apparatus of claim 1 wherein the first plurality of indentations includes an  
2         elongated groove, and wherein said optical fiber is held within the elongated groove.

1    4. The apparatus of claim 1 wherein the second plurality of indentations includes at least  
2         one trapezoidal-shaped pocket.

1    5. The apparatus of claim 4 wherein the second plurality of indentations includes an  
2         elongated groove, and wherein said optical device comprises a lens mounted to said base  
3         within the elongated groove.

1    6. The apparatus of claim 1 wherein at least one of said plurality of spacers are  
2         spherically-shaped.

1    7. The apparatus of claim 6 wherein at least one of said plurality of spacers and said  
2         optical device are made of the same material.

1    8. The apparatus of claim 7 wherein the first plurality of indentations includes at least  
2         one trapezoidal-shaped pocket.

1       9. The apparatus of claim 1 wherein the second plurality of indentations includes at least  
2       one trapezoidal-shaped pocket.

1       10. The apparatus of claim 9 further comprises:

2              a single spacer mounted within one of said second plurality of indentations,  
3       wherein said fiber holder is mounted to said base in contact with said single spacer at an  
4       end of said fiber holder and establishes a horizontal position of said fiber holder.

1       11. The apparatus of claim 9 wherein one of the second plurality of indentations is  
2       formed to a different depth than a second of the second plurality of indentations.

1       12. The apparatus of claim 2 wherein said base further comprises:

2              a third plurality of indentations formed in said base; and  
3              a second plurality of spacers, each of said second plurality of spacers within a  
4       corresponding one of said third plurality of indentations, wherein said optical device is  
5       mounted to said base in contact with at least two of said second plurality of spacers and  
6       establishes a horizontal position of said optical device.

1       13. The apparatus of claim 12 wherein said optical device has a round central section.

1       14. The apparatus of claim 12 wherein the optical device comprises one of a dome-  
2       shaped lens and a disk-shaped lens.

1       15. The apparatus of claim 2 wherein said base further comprises:

2              a third plurality of indentations formed in said base; and  
3              a second plurality of spacers, each of said second plurality of spacers within a  
4       corresponding one of said third plurality of indentations, wherein said optical device is  
5       mounted to said base in contact with at least three of said second plurality of spacers and  
6       establishes a vertical position of said optical device.

1       16. The apparatus of claim 15 wherein said optical device has at least one flat face.

1       17. The apparatus of claim 15 wherein said optical device comprises one of a dome-  
2       shaped lens and a disk-shaped lens.

1       18. The apparatus of claim 1 wherein the second plurality of indentations formed in said  
2       base includes at least one indentation located adjacent to an edge of said base, and  
3       wherein one of said plurality of spacers held within the one indentation adjacent to the  
4       edge of said base protrudes beyond the edge of said base and establishes a known  
5       distance from a contact point on said spacer to a point on said base.

1       19. The apparatus of claim 18 wherein the one indentation adjacent to the edge of said  
2       base is a trapezoidal-shaped pocket, and wherein the one of said plurality of spacers held  
3       within the one indentation adjacent to the edge of said base contacts an interior wall of  
4       the trapezoidal-shaped pocket.

1       20. An apparatus which holds a plurality of optical fibers in alignment to a plurality of  
2       optical devices, said apparatus comprising:

3              a fiber holder having a first plurality of indentations formed therein;  
4              a plurality of optical fibers, each of said plurality of fibers within a corresponding  
5       one of the first plurality of indentations;  
6              a base substrate having a second plurality of indentations formed into said base;  
7              a plurality of spacers, each of said plurality of spacers within a corresponding  
8       one of the second plurality of indentations, wherein said fiber holder is mounted on said  
9       base with said plurality of spacers within said first plurality of indentations; and  
10             a plurality of optical devices mounted to an end of said fiber holder wherein each  
11       of said plurality of optical devices are aligned with a one of said plurality of optical  
12       fibers.

1       21. The apparatus of claim 20 wherein at least one of said plurality of optical devices  
2       comprises a lens.

1       22. A method of aligning optical devices comprising:

2           mounting a first optical device on a first base having a partial indentation formed  
3       in an edge of said first base that holds a spacer to protrude beyond the edge of said first  
4       base and establishes a known distance from a point on the spacer to the first optical  
5       device;

6           mounting a second optical device on a second base; and

7           aligning the second optical device to the first optical device by placing the  
8       second base to contact the spacer held in the first base.